B. Management of Migration (MM) Alternatives

1. Overall Protection of Human Health and the Environment

Management of Migration alternatives MM-1 and MM-2 (no action and limited action, respectively) do not provide adequate protection of human health and the environment since no remedial action or only institutional controls are incorporated into these two alternatives. These alternatives do not provide for cleanup of contaminated groundwater to protect public health and wildlife, and does not protect off-site groundwater and surface waters. Institutional controls alone are not sufficient to protect human health and the environment. The MM-1 alternative was included in the Final Draft FS and in this assessment principally to serve as a basis for comparison with the other MM alternatives considered.

Since the remaining MM alternatives incorporate similar, yet different variations of a groundwater extraction and treatment system, all of these alternatives would eventually provide for the overall protection of human health and the environment. At a minimum, these remaining four MM alternatives (MM-3 through MM-6) would provide for the isolation (control) of the groundwater contamination at the Site.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Management of Migration alternatives MM-1 and MM-2 will not comply with the ARARs established for the Site, since concentrations of contaminants in groundwater will continue to exceed MCLs and non-zero MCLGs if no remedial action is undertaken.

Based on the information provided in the Final Draft RI and FS, alternatives MM-3 through MM-6 would comply with MCLs and non-zero MCLGs, which are ARARs for the groundwater cleanup. Compliance with ARARs is made more certain through: (i) the use of vacuum-enhanced extraction in conjunction with traditional groundwater pumping methods (MM-4 and MM-6), supplemented by (ii) implementation of a SC alternative which employs treatment to reduce the toxicity, mobility and volume of contaminants (SC-5, SC-6 and SC-7). Vacuum-enhanced extraction also allows for the removal of

soil contaminants that exist in areas which may not otherwise undergo excavation, and thus ARARs would likely be achieved more rapidly.

Alternatives MM-3 and MM-4 involve discharge of treated groundwater to Quiggle Brook. Both alternatives employ the UV/oxidation treatment method, which will attain water quality standards, including Federal Ambient Water Quality Criteria. Alternatives MM-5 and MM-6, which involve reinjection of treated groundwater into the aquifer, comply with federal and state ARARs, which require attainment of drinking water standards in the reinjected groundwater.

3. Long-Term Effectiveness and Permanence

Alternatives MM-1 and MM-2 would not provide any degree of long-term effectiveness or permanence since the groundwater contamination on the Site would continue without any form of treatment or containment. The potential for institutional controls to reliably restrict the exposure to the principal threat (risk) at and surrounding the Site (i.e. the groundwater contamination) over the long-term would require careful coordination with the community, local and state officials, and EPA.

Since alternatives MM-3 through MM-6 utilize an identical method for treating the extracted groundwater, the long-term effectiveness and permanence afforded by these alternatives are relatively similar with respect to such treatment. However, alternatives MM-4 and MM-6, which incorporate vacuum-enhanced extraction and conventional groundwater pumping, would provide a greater degree of long-term certainty relative to overall protectiveness and compliance with ARARs. This is principally due to the additional removal of contaminants from soils through the use of vacuum-enhanced extraction, which would not be achieved through the use of conventional groundwater pumping alone as provided in alternatives MM-3 and MM-5.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

Management of migration alternatives MM-1 and MM-2 do not provide any reduction of the toxicity, mobility or volume of the groundwater contamination which exists at the Site since treatment is not employed as a part of these alternatives.

In contrast, MM-4 and MM-6, which employ treatment of the principal threat posed by the Site (i.e the groundwater contamination), will permanently and significantly reduce the toxicity, mobility and volume of the hazardous substances at the UCC Site. MM-3 and MM-5 also employ treatment that will reduce toxicity and volume, but reinjection could cause groundwater mounding in the till zone, which may force contaminants deeper into the bedrock or into previously uncontaminated areas.

5. Short-Term Effectiveness

While MM-1 and MM-2 pose the least impacts to the surrounding community and those limited workers required to implement these alternatives over the short-term, these alternatives do not provide overall protection or comply with ARARs, as discussed herein, and they are thus eliminated from further consideration.

Alternatives MM-3 through MM-6 would each involve similar degrees of short-term risks and potential community and worker impacts during implementation of the groundwater extraction wells and treatment system. In addition, mitigative measures (such as continuous monitoring of them systems) would assure that these impacts would be minimal. However, based on the information provided in the Final Draft FS, EPA believes that the time to achieve overall protection and compliance with ARARs is more certain with the implementation of alternatives MM-4 and MM-6, which incorporate vacuum extraction of previously saturated soils within the area of the groundwater extraction well proper. EPA is also aware that the fractured bedrock conditions at the Site may pose inherent difficulties that may affect achieving the groundwater cleanup levels within the time frames estimated in the Final Draft FS. Therefore, these estimated time frames may change upon completion of a thorough review of the performance of the groundwater extraction and treatment system throughout design, construction, and operation and maintenance.

For all the MM alternatives involving groundwater extraction, the public has raised concerns that the capacity of nearby drinking water wells will be reduced. However, these potential impacts are overshadowed by the risk that reinjection of treated groundwater (under MM-5 and MM-6)

could result in mounding of groundwater and possible contamination of previously unaffected areas surrounding the Site.

6. Implementability

All MM alternatives are considered to be administratively and technically feasible, with respect to all construction, operation, and availability of services required. However, technical concerns with alternatives MM-5 and MM-6 which incorporate reinjection of treated water versus direct discharge into Quiggle Brook have been raised. These technical difficulties involve the spacial limitations for installing these reinjection wells and the long-term maintenance problems which will likely occur due to clogging of the wells themselves.

7. Cost

As provided in the attached Table 12 and in Appendix D of the Final Draft FS, the capital, annual operation and maintenance and net present worth costs for all management of migration alternatives (excluding MM-1 and MM-2) vary slightly, primarily due to the time frame estimated for achieving remediation of the groundwater contamination. In particular, alternatives MM-3 through MM-6, which all incorporate groundwater extraction but differ in the mechanics of such extraction and reinjection/discharge of the treated water, have a range of present worth costs of from approximately $4.2 to $6.8 million (depending on the estimated remediation time frame, i.e. 12 years to 100 years, respectively).

8. State Acceptance

The State of Maine, Department of Environmental Protection (MDEP) is in favor of MM-4 for the management of migration alternative. This alternative, the State believes, is the alternative that is most likely to restore the aquifer to drinking water quality.

9. Community Acceptance

In general, the comments received during the public comment period (both orally and in writing) and the discussions held at the public informational/hearings suggested that the

community favored (with reservations) the management of migration remedy identified in the Proposed Plan, but did not offer any other comments/recommendations or otherwise with regards to the other MM alternatives. Comments received during the public comment period are attached in document entitled "Responsiveness Summary" (Appendix A).

C. Facilities (F) Management Alternatives

1. Overall Protection of Human Health and the Environment

Facilities management alternatives, F-1 and F-2 (no action and limited action, respectively) do not provide adequate protection of human health and the environment since no remedial action or only institutional controls are incorporated into these two alternatives. Specifically, F-1 and F-2 would not reduce ingestion or absorption of the dioxin and other contaminants in the incinerator equipment, or prevent inhalation of asbestos within the Still Building. In addition, F-1 and F-2, which do not include removal of the facilities, would prevent the effective treatment of contaminated soils through implementation of SC-5 or SC-7. The F-1 alternative was included in the Final Draft FS and in this assessment principally to serve as a basis for comparison with the other facilities alternatives considered, and are thus eliminated from further consideration.

Since the remaining facilities alternatives incorporate some degree of either decontamination, and/or demolition and disposal, all of these alternatives would eventually provide for the overall protection of human health and the environment by eliminating, reducing, or controlling (over the long-term) potential exposures to the hazardous materials on and/or within these facilities.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Facilities alternatives F-1 and F-2 would not allow for compliance with the ARARs established for the Site, particularly, RCRA closure and post closure requirements and federal and state asbestos requirements. Furthermore, these two alternatives would significantly prohibit the effective implementation of a source control and/or management of migration remedy which would be required to eliminate the

continuing source of and the groundwater exceedances of ARARs established for the Site.

The facilities alternatives F-3 and F-4 would comply with ARARs through careful planning and control of the decontamination component of these alternatives. In addition, the requirements for disposal of RCRA hazardous wastes found in these facilities would comply with the RCRA ARARs established for the Site. Alternative F-5 would not result in ARARs compliance since the RCRA hazardous waste would not be treated prior to off-site disposal. (For this reason, this alternative should have been eliminated from the detailed analysis.)

3. Long-Term Effectiveness and Permanence

Alternative F-1 would not provide any degree of long-term effectiveness or permanence since the hazardous materials within the facilities would remain, and the risks estimated from exposures too these materials would not be reduced. Alternative F-2 would provide a slightly greater degree of long-term effectiveness, but the potential for institutional controls to restrict reliably the exposure to these facilities would require careful coordination with the community, local and state officials, and EPA.

Alternatives F-3 through F-5 would provide a similar degree of long-term effectiveness and permanence since no residual waste which would pose a risk to the public health, welfare or the environment would remain within the facilities. However, alternative F-3 would have a direct influence on the available source control remedy which could be undertaken at the Site, since the facilities would remain following decontamination. On the other hand, alternatives F-4 and F-5 would remove all facilities following decontamination and removal of the hazardous wastes contained within these facilities, thereby facilitating the excavation of contaminated soils, which will result in a overall remedy that is more effective in the long term.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

Alternatives F-1 and F-2 do not provide any reduction of the toxicity, mobility or volume of the contamination which exists within the facilities since no treatment would be

employed.

Alternatives F-3 through F-4, which employ treatment of the hazardous materials within the facilities prior to disposal and decontamination of these facilities, would permanently and significantly reduce the toxicity, mobility and volume of the hazardous substances at the UCC Site. Alternative F-5 will not reduce the toxicity, mobility or volume through treatment of the contamination contained in the facilities.

5. Short-Term Effectiveness

Alternatives F-1 and F-2 pose the least short-term impacts to the surrounding community and those limited workers required to implement these alternatives.

The short-term impacts of the remaining facilities alternatives principally result from the additional truck traffic which would be required to remove the hazardous wastes within the facilities off the Site. Additionally, alternatives F-4 and F-5 would result in further impacts to workers, the community and the environment due to the demolition activities that would occur. However, the protective measures employed with these alternatives and the air monitoring that would occur should ensure that these impacts are minimized and/or mitigated. Furthermore, the impacts from the demolition activities described in F-5 would likely be greater than those resulting from F-4 since no decontamination would occur on the facilities prior to demolition.

6. Implementability

All facilities alternatives are considered to be administratively and technically feasible, with respect to all construction, operation, and availability of services required. However, as previously noted herein, the implementation of those facilities alternatives which do not involve demolition of the facilities (i.e. F-1 through F-3) prevent the selection of an effective source control remedy involving excavation.

7. Cost

As provided in the attached Table 12 and in Appendix D of the Final Draft FS, the capital, annual operation and

maintenance and net present worth costs for all the Facilities management alternatives (excluding F-1 and F-2) vary by less than one-order of magnitude. Specifically, these present worth costs range from approximately $0.2 million for alternative F-3 to $1.8 million for alternative F-5.

8. State Acceptance

The State of Maine, Department of Environmental Protection (MDEP) concurs with the selection of F-4, as part of a comprehensive multi-phased approach to contamination at the Site.

9. Community Acceptance

In general, the comments received during the public comment period (both orally and in writing) and the discussions held at the public informational/hearings suggested that the community favored (with reservations) the facilities management remedy identified in the Proposed Plan, but did not offer any other recommendations or otherwise with regards to the other facilities alternatives. Comments received during the public comment period are attached in document entitled "Responsiveness Summary" (Appendix A).

D. Off-Site Soils (OS) Alternatives

1. Overall Protection of Human Health and the Environment

Neither of the two OS alternatives, OS-1 and OS-2 (no action and limited action, respectively) involve active remedial measures such as capping or excavation and treatment. However, OS-2 provides a greater degree of overall protection, because it will be used to further evaluate and verify the previous results which indicate that there is not a significant threat associated with airborne contamination from past operations of the UCC incinerator.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Since these two alternatives do not result in significant remedial actions, few ARARs exist from which to determine compliance. However, under OS-2, compliance with ARARs will occur for the protection of workers performing the

additional sampling and analysis required by this alternative.

3. Long-Term Effectiveness and Permanence

OS-2 would provide additional long-term permanence in comparison to OS-1, if potential remedial actions were required based on the results obtained through implementation of this alternative.

4. Reduction of Toxicity, Mobility or Volume Through Treatment

Alternatives OS-1 and OS-2 do not provide any reduction of the toxicity, mobility or volume of hazardous substances since no treatment would be employed.

5. Short-Term Effectiveness

Alternatives F-1 and F-2 pose no short-term impacts to the surrounding community and environment, and those limited workers required to implement these alternatives.

6. Implementability

All OS alternatives are considered to be administratively and technically feasible, with respect to the availability of services required.

7. Cost

As provided in the attached Table 12 and in Appendix D of the Final Draft FS, the capital, annual operation and maintenance and net present worth costs for these two OS alternatives range from approximately $0 to $0.3 million.

8. State Acceptance

The State of Maine, Department of Environmental Protection (MDEP) believes strongly that OS-2 is necessary to protect public health or the environment and that it is an important component of a comprehensive remedy for this Site.

9. Community Acceptance

In general, the comments received during the public comment

period (both orally and in writing) and the discussions held at the public informational/hearings suggested that the community favored (with reservations) the off-site soils remedy identified in the Proposed Plan in comparison to the No-Action alternative. Comments received during the public comment period are attached in document entitled "Responsiveness Summary" (Appendix A).

X. THE SELECTED REMEDY

The selected remedial action for the UCC Site is a comprehensive, multi-component approach for overall remediation of the contaminated on-site soils, groundwater and facilities, and a further evaluation of off-site soils surrounding the Site area. This comprehensive remedial approach is described in detail herein, following the discussions immediately below regarding cleanup levels. The cleanup levels discussed herein have been established to guide the remedial design and for use in measuring the success of the selected remedial action for the UCC Site.

A. Cleanup Levels

Cleanup levels have been established for those contaminants of concern identified in the Baseline Risk Assessment, and those additional contaminants that were found to exceed site-specific ARARs or other criteria which were to-be-considered ("TBC")[3] at the Site.

Periodic assessments of the protection to human health and the environment afforded by remedial actions selected for the UCC Site will be made as the remedy is being implemented and at the completion of the remedial action. If it is determined that the completed remedial action is not or will not be protective of human health and the environment, further action shall be required. The determination of the protectiveness afforded by the remedial action will consider, at a minimum, the cancer risk range of 10^{-4} to 10^{-6}, as provided in the National Contingency Plan (NCP).

1. Groundwater Cleanup Levels

The aquifers underlying and surrounding the UCC Site are current sources of drinking water to the local community and have been classified according to EPA's Ground-Water Protection Strategy as Class IIA and the State's groundwater classification scheme as GW-A.

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[3] Under the NCP, standards which, although not ARARs, are to-be-considered ("TBC") may be used in determining what is protective at a site.

Accordingly, cleanup levels have been set based on Maximum Contaminant Levels [MCLs] and non-zero Maximum Contaminant Level Goals [MCLGs], if available. More specifically, cleanup levels for known and probable carcinogenic compounds (Classes A & B) have been set at the appropriate MCL, if available.[4] Cleanup levels for Class C compounds (possible carcinogens), Class D compounds (not classified), and Class E compounds (no evidence of carcinogenicity) have been set at the MCLG, which is typically set at levels greater than zero and equal to the MCL.

In the absence of an established MCLG or MCL, other suitable criteria (TBCs) were considered for the UCC Site. In these instances, EPA used proposed rules under the Safe Drinking Water Act -- proposed MCLGs and proposed MCLs -- or State of Maine Maximum Exposure Guidelines (MEGs) to establish the cleanup level for both carcinogenic and non-carcinogenic compounds.

[4] Note that for Class A & B carcinogenic compounds, the MCLG established under the Safe Drinking Water Act [SDWA] has been set equal to zero.

Table A.1 below summarizes the groundwater cleanup levels established for those carcinogenic contaminants identified at the UCC Site, with the exception of Arsenic. The cleanup level for Arsenic, which was identified as a contaminant of concern, will be set at the MCL of 50 ppb. Arsenic was not included in Table A.1 since the maximum concentration detected during the RI did not exceed the MCL. However, since Arsenic was a contaminant of concern, limited monitoring for arsenic will be included in the groundwater monitoring program to be undertaken during the remedial action. This will be conducted to verify that the arsenic MCL is not being exceeded.

TABLE A.1

GROUNDWATER CLEANUP LEVELS FOR THE CARCINOGENIC COMPOUNDS IDENTIFIED IN THE GROUNDWATER AT THE UCC SITE

Carcinogenic Contaminants	Cleanup Level (ppb)	Basis for Cleanup Level	Level of Risk
Bis(2-ethylhexyl)phthalate	4	PMCL[1]	$2x10^{-6}$
Carbon Tetrachloride	5	MCL[2]	$2x10^{-5}$
Chloroform (as Total THM[3])	100	MCL[4]	$2x10^{-5}$
1,1-dichloroethane	5	MEG	$1x10^{-5}$
1,2-dichloroethane	5	MCL[2]/MEG	$1x10^{-5}$
1,1-dichloroethene	7	MCLG-MCL[2]/MEG	$1x10^{-4}$
Methylene Chloride	5	PMCL[1]	$1x10^{-6}$
Tetrachloroethene	5	PMCL[5]	$7x10^{-6}$
Trichloroethene	5	MCL[2]/MEG	$2x10^{-6}$
Vinyl Chloride	2	MCL[2]	$1x10^{-4}$
		SUM (with Vinyl Chloride and 1,1-dichloroethene included in sum)	$3x10^{-4}$
		SUM (without Vinyl Chloride and 1,1-dichloroethene included in sum)	$9x10^{-5}$

1 - 55 Fed. Reg. 30370, 371.
2 - 52 Fed. Reg. 25690, 691.
3 - THM, represents the word Trihalomethanes.
4 - 40 CFR 141, § 141.12.
5 - 54 Fed. Reg. 22062, 064.

Table A.2 below summarizes the groundwater cleanup levels established for those non-carcinogenic contaminants (as well as those carcinogenic contaminants which also exhibit non-carcinogenic effects) identified at the UCC Site, with the exception of Arsenic and Lead. The cleanup levels for Arsenic and lead, which were both identified as contaminants of concern, will be set at their respective MCLs of 50 ppb. Arsenic and lead were not included in Table A.2 since their maximum concentrations detected during the RI did not exceed their respective MCLs. However, limited monitoring for arsenic and lead will be included in the groundwater monitoring program to be undertaken during the remedial action. This will be conducted to verify that the arsenic and lead MCLs are not being exceeded.

TABLE A.2

GROUNDWATER CLEANUP LEVELS FOR THE NON-CARCINOGENIC COMPOUNDS IDENTIFIED IN THE GROUNDWATER AT THE UCC SITE

Non-Carcinogenic Contaminants	Cleanup Level (ppb)	Basis for Cleanup Level	Target Endpoint of Toxicity	Hazard Quotient
Bis(2-ethylhexyl)phthalate	4	PMCL[1]	Liver	.006
Carbon Tetrachloride	5	MCL[2]	Liver	.20
Chloroform (as Total THM)	100	MCL[3]	Liver	.30
1,2-dichloroethene-cis	70	PMCL[4]/MEG	Blood	.21
1,2-dichloroethene-trans	100	PMCLG-PMCL[4]	Blood	.15
1,1-dichloroethane	5	MEG	Kidney	.002
1,1-dichloroethene	7	MCLG-MCL[2]/MEG	Liver	.02
Ethylbenzene	700	PMCL[4]/MEG	Liver & Kidney	.20
Methylene Chloride	5	PMCL[1]	Liver	.002
Methyl Ethyl Ketone	170	MEG	Fetotoxicity	.10
Tetrachloroethene	5	PMCL[4]	Liver	.01
Toluene	2,000	PMCL[4]/MEG	CNS	.20
1,1,1-trichloroethane	200	MCLG-MCL[2]/MEG	Liver	.06
Total Xylenes	10,000	PMCLG-PMCL[4]	Hyperactivity, Decreased Body Weight	.15

[1] - 55 Fed. Reg. 30370, 371.
[2] - 52 Fed. Reg. 25690, 691.
[3] - 40 CFR 141, § 141.12.

[4] - 54 Fed. Reg. 22062, 064.

The Hazard Index (HI) for those compounds included in Table A.2, which have been identified as having similar toxicity endpoints, is as follows:

Endpoint	HI
Liver	.60
Blood	.36
Liver & Kidney	.20
CNS	.20
Fetotoxicity	.10
Hyperactivity & Decreased Body Weight	.15

The groundwater cleanup levels discussed herein and as presented in Tables A.1 and A.2 must be met at the completion of the remedial action at the compliance points. These compliance points will be: (i) throughout the underlying shallow and bedrock aquifers on the UCC Site, and (ii) in areas of contaminated groundwater immediately off the Site. Based on the currently available information obtained during the Remedial Investigation, EPA and the State of Maine DEP believe that these cleanup levels will be achieved within 15 to 30 years of full-scale implementation of the management of migration component of the selected remedy, as estimated in the Final Draft FS. However, if it becomes apparent, during full-scale implementation and/or operation of the groundwater extraction system, that the groundwater contaminant levels at the Site have ceased to decline and are remaining constant at concentrations higher than the cleanup levels specified above, the groundwater extraction and treatment system, its performance standards, and/or the management of migration component of the selected remedy may require reevaluation.

These cleanup levels are consistent with the ARARs determined for the groundwater at the UCC Site and will, at the completion of remedial action, attain EPA's risk management goal for remedial actions (e.g. carcinogenic risk range of between 10^{-4} and 10^{-6}).

2. Soil Cleanup Levels

Cleanup levels in soils were established in order to protect human health from ingestion of contaminated groundwater. The establishment of specific soil cleanup levels is critical in order to prevent further leaching of these soil contaminants into the groundwater aquifers below the UCC Site.

The "Decision Tree Process," a percolation-transport model (as described in detail in Appendix B of the Final Draft FS) was used to estimate the residual levels of contaminants in soil (following excavation and treatment) that are not expected to impair future groundwater quality. Federal MCLs and non-zero MCLGs, the ARARs used to establish groundwater cleanup levels for the UCC Site, were used as the levels from which to extrapolate back to establish the specific soil cleanup levels required, based on this specific model. Where no MCL or MCLG existed for a particular contaminant, proposed MCLGs and proposed MCLs were also considered in this process.

Table B.1 summarizes the cleanup levels established for the four most prevalent soil contaminants identified at the UCC Site. These soil cleanup levels were selected for only these four soil contaminants based upon: (i) their wide lateral distribution throughout the Site; (ii) their high concentrations relative to their respective MCLs and non-zero MCLGs; (iii) the fact that these four contaminants are co-located with other soil contaminants within the principal source area on the Site; and (iv) their range of organic carbon partitioning coefficients (K_{oc}).

TABLE B.1

SOIL CLEANUP LEVELS ESTABLISHED FOR THE PROTECTION OF HUMAN HEALTH AND THE UNDERLYING AQUIFERS AT THE UCC SITE BASED ON THE DECISION TREE PROCESS PERCOLATION-TRANSPORT MODEL

Soil Contaminants	Soil Cleanup Level (ppm)	Basis for Model Input	Target Endpoint of Toxicity	Residual Groundwater Risk and/or Hazard Quotient
Carcinogenic contaminants				
1,1-dichloroethene	0.1	MCLG-MCL	----	$1x10^{-4}$
Trichloroethene	0.1	MCL	----	$2x10^{-6}$
Tetrachloroethene	0.1	PMCL	----	$7x10^{-6}$
Non-Carcinogenic contaminants				
1,1-dichloroethene	0.1	MCLG-MCL	Liver	.02
Tetrachloroethene	0.1	PMCL	Liver	.01
Total Xylenes	100.0	PMCLG-PMCL	Hyperactivity, Decreased Body Weight	.15
		SUM		$1x10^{-4}$
		(for carcinogenic contaminants)		
	and			
		Total HI	Liver	.03
			Hyperactivity, Decreased Body Weight	.15
		(for non-carcinogenic contaminants)		

These soil cleanup levels are consistent with the ARARs established for the groundwater at the UCC Site. These soil cleanup levels will also allow for the attainment of EPA's risk management goal for remedial actions (i.e. the groundwater carcinogenic risk level will be between 10^{-4} and 10^{-6} and the Hazard Index will be less than 1 at the

completion of the remedial action). These soil cleanup levels will be achieved throughout the Site, and will be confirmed at the completion of the remedial action to be undertaken at the UCC Site.

B. Description of Remedial Components

The selected remedy for the UCC Site includes a combination of remedial alternatives SC-5, MM-4, F-4 and OS-2, as noted previously in Section VIII. The major components of this comprehensive, multi-component remedy include:

1. Soil Excavation and On-Site Low-Temperature Soil Aeration Treatment (SC-5);

2. Vacuum-Enhanced Groundwater Extraction, On-Site Groundwater Treatment, and On-Site Discharge of Treated Groundwater into Quiggle Brook (MM-4);

3. Facilities Decontamination and Demolition, and Off-Site Disposal of Debris (F-4); and

4. Limited Action for Off-Site Soils (OS-2).

The following discussions present in further detail the events which will likely occur during the implementation of each of the above-described major remedial components of the selected remedy.

SC-5: Soil Excavation and On-Site Low-Temperature Soil Aeration Treatment

The selected remedy for the contaminated on-site soils at the UCC Site involves excavation and on-site treatment to achieve the soil cleanup levels stated above.

Excavation and Materials Handling of Contaminated On-Site Soils

This source control remedial alternative will require removing the existing facilities at the Site (as discussed in detail later under the selected Facilities remedial alternative) in order to excavate the on-site contaminated soils identified for cleanup.

Once these facilities are removed from the Site,

contaminated soils within the unsaturated zone, as well as those within the saturated zone in selected locations, which exceed the soil cleanup levels will be excavated for subsequent treatment on the Site. The contaminated, unsaturated[5] soils requiring excavation and treatment are primarily located within the enclosed-fenced portion of the Site. The vertical, lower excavation limit for these contaminated, unsaturated soils will be determined by EPA based on either: (a) 0.5 feet below the groundwater table encountered at the time of excavation; (b) 11.5 feet below the ground surface (which was based upon the assumptions used to establish the site-specific soil cleanup levels previously detailed herein); or (c) deeper than described in (a) and (b) above in localized areas if appropriate and if technically practicable.

The contaminated, saturated soils that exceed the soil cleanup levels and that require excavation and treatment are primarily located in the area between the old leach field and the interceptor trench (as depicted in Figure 38 of the Final Draft FS). The vertical, lower excavation limit for these contaminated, saturated soils will be, at a minimum, 6.0 feet below the groundwater table encountered at the time of excavation.

Contaminated, saturated soils that are outside the areas primarily described above and that exceed the soil cleanup levels will not be excavated, but will be removed for treatment using the vacuum-enhanced extraction wells discussed under the management of migration selected remedial alternative below. Supplemental soil sampling and analysis will be conducted during the remedial design and remedial action to further confirm the lateral and vertical limits of excavation in both the unsaturated and saturated soils.

Initially, the excavation will likely proceed in those areas of the Site where the on-site low-temperature thermal treatment unit will be setup for full-scale operation.

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[5] Excavation of unsaturated soils will likely involve the excavation of some saturated soils below the water table within the areas of this excavation. The extent of excavation of contaminated soils within these areas will be more fully evaluated during the remedial design and remedial action performed at the Site.

Clean fill will be brought onto the Site, if necessary, to backfill this excavated area and to provide an adequate base for the thermal treatment unit. Prior to setting up the thermal treatment unit on the Site, the entire area where this unit will be located will also be covered with a low permeability, synthetic liner to eliminate the possibility of contaminating the underlying uncontaminated soil or clean fill which may have been brought onto the Site.

To ascertain that those areas which undergo excavation achieve the soil cleanup levels specified in this ROD, confirmatory sampling will occur within and along the perimeters of all excavated areas. This sampling will be conducted to determine, statistically whether a particular excavated area has achieved the soil cleanup levels or requires further excavation. An on-site, mobile and/or an off-site, certified laboratory will provide confirmatory analyses on soil samples obtained from throughout these excavated areas.

Throughout all phases of the excavation, materials handling (including screening, crushing, and transfer operations) and/or any stockpiling activities conducted on Site soils (or concrete), every effort will be made to minimize or mitigate any airborne release of volatile organic and particulate emissions (and excessive noise) from the Site in order to protect the public health, welfare and the environment. These efforts will include the use of one or more of the following techniques in order to minimize or mitigate the release of such emissions: controlled excavation techniques, dust suppressants (e.g. water or foaming agents), stock and/or waste pile coverings, partial or full enclosures on each or all of the on-site work areas, and air pollution control devices to treat air emissions collected by an enclosure. These efforts are critical since significant on-site contamination includes compounds which could threaten public health, and volatile aromatic compounds such as toluene, xylene, and ethylbenzene which may result in odors. All of these potential air emission releases must be adequately monitored and controlled on the Site in order to protect public health, welfare and the environment located off the Site.

Treatment of Contaminated, Excavated Soils

All specified, excavated soils exceeding the soil cleanup

levels will be treated using a low-temperature soil aeration or equivalent thermal desorption (aeration) treatment process located on the Site. This process will treat the excavated, contaminated soils by processing them through a low-temperature (estimated at 300 to 850 degrees Fahrenheit) thermal treatment unit in order to meet the soil cleanup levels and treatment standards described herein.

Prior to full-scale treatment of the contaminated soils, pilot-scale tests will be conducted on the Site using site-specific soils. The primary objectives of these tests will be, at a minimum, to (i) confirm that the full-range of contaminants and their respective concentrations in soils will routinely attain the soil cleanup levels and treatment standards specified for this Site, (ii) determine the optimum operational settings for or modifications required to the treatment unit prior to full-scale treatment on the Site, (iii) establish the most feasible location for placement of the thermal treatment unit on the Site while minimizing the need to clear excessive trees and brush on the property, (iv) provide a comprehensive materials balance estimate for all waste streams resulting from this process and the media-specific criteria to used for determining the ultimate disposition for all waste streams from the process, (v) assess the effectiveness of the air pollution control equipment (to be used with the thermal treatment process) on the volatilized contaminants generated by this process, and (vi) collect various air monitoring data in order to provide information regarding the appropriate techniques and extent of air pollution controls and monitoring required during full-scale operations. Additionally, prior to full-scale treatment and during the excavation activities stated previously, the contaminated, excavated soils will be screened to remove all cobbles and/or boulders encountered during excavation which cannot be successfully treated without prior crushing. Those cobbles/boulders which are too large for treatment will be crushed and then fed into the low-temperature soil aeration or equivalent thermal desorption (aeration) treatment unit.

The full-scale thermal treatment process will occur within a closed system, capturing any fugitive dust and/or volatile organics that are generated by the thermal treatment process. The organic contaminants that are driven-off (volatilized) from the contaminated soils as vapors will be further treated using vapor-phase carbon adsorption

materials or an equivalent treatment method in order to: (i) satisfy the site-specific discharge and air emission requirements or other criteria to-be-considered, and (ii) protect public health, welfare and the environment at the property boundary. If carbon adsorption materials are utilized, these materials will undergo thermal regeneration or incineration at an approved off-site facility. Furthermore, to ensure compliance with all Federal and State air quality standards (including, but not limited to, particulate and air toxic requirements/criteria), any fugitive dust (particulate matter) generated by the thermal treatment process will be collected by additional air pollution control equipment. Particulate matter (including fines) that are collected by these air pollution control equipment will be sampled and analyzed and, if necessary, treated to met the soil cleanup levels and treatment standards established for the Site, by the thermal aeration treatment unit prior to returning these materials onto the Site. These materials must be mixed with previously treated soils prior to being returned to the excavation.

During and following full-scale treatment of the contaminated soils on the Site, the treated soils will be frequently and representatively sampled and analyzed to ensure that both the soil cleanup levels stated in this ROD and the treatment standards established under RCRA's Land Disposal Restrictions (LDRs) at 40 CFR 268, Subpart D, § 268.40, are being achieved. Treated soils that achieve these site-specific soil cleanup levels and treatment standards will be placed in the original, excavated area on the Site. Treated soils that do not achieve these site-specific levels or treatment standards will be further treated by this process, to the maximum extent practicable. As stated in the Final Draft FS, EPA believes that the LDR treatment standards can be attained using this source control remedial technology. However, any soils that do not achieve these site-specific cleanup requirements will either undergo further treatment on-site using a different treatment technology approved by EPA, or a Treatability Variance under RCRA may be required to comply with the RCRA LDRs.

Air monitoring will be continuously performed during all excavation, materials handling and soil treatment activities. This comprehensive air monitoring program will include, at a minimum, the acquisition of both volatile

organic and particulate samples from areas where excavation, materials handling and treatment are occurring, as well as along the perimeter and at specific off-site locations. The specific contaminants, sampling methodologies, and analytical requirements will be determined during the remedial design by conducting, at a minimum, air modeling of these potential emission sources. Regular monitoring for airborne volatile organic emissions will be performed both on a real-time and laboratory, chemical-specific confirmatory basis. This air monitoring information will be used, at a minimum, to determine: (1) whether operations will continue as scheduled; (2) whether contingency actions (such as slowing operations) are required on the Site; (3) whether operations should be shutdown partially or completely in order to make modifications to the operations; or (4) whether contingency actions (such as notification) are required for the surrounding community.

Site Restoration

Surface water controls will be implemented around the Site to direct surface water runoff away from the Site both during and following remedial actions performed on the Site. Additionally, as noted above, treated soils that achieve the site-specific cleanup levels and treatment standards will be used as backfill within the excavated areas on the Site and/or used to recontour the entire area to promote drainage. Prior to placement of these treated soils back on the Site, all soils will be mixed with nutrients and/or native soils to promote the re-establishment (comparable to the surrounding area) of these soils for future habitat growth. Finally, all disturbed areas of the Site will be regraded and revegetated to prevent further surface water erosion from occurring on the Site, and to establish vegetative growth which is comparable to the surrounding wooded/grassy areas. These steps will occur after all equipment has been decontaminated and removed from the Site as part of this source control component of the overall remedial action for the Site.

MM-4: Vacuum-Enhanced Groundwater Extraction, On-Site Treatment, and Discharge to Quiggle Brook

To address the significant groundwater contamination existing throughout the shallow till and weathered, shallow bedrock aquifers underlying the Site, a vacuum-enhanced

groundwater extraction and treatment system configuration will be employed at the UCC Site.

Establishment of Institutional Controls During Remedial Design/Remedial Action

Institutional controls will be required for the UCC property and surrounding properties to the Site to protect human health and the environment, and to supplement the remedial actions that will be designed, implemented and operated according to this ROD.

Institutional controls required on the UCC property will include, at a minimum, restricting access and use (through deed restrictions, the installation of additional lighting, fences and warning signs, and/or other mechanisms) during the remedial action, and restricting the use (through deed restrictions and/or other mechanisms) of the on-site contaminated groundwater for drinking water purposes.

In addition, institutional controls will be required on surrounding properties to the UCC Site. These institutional controls may include, at a minimum: (i) restrictions on the use of existing bedrock drinking water wells on properties located in close proximity to the Site whose pumping is shown to accelerate or alter the movement of contaminated groundwater from beneath the Site; this includes, at a minimum, residential well # 20 in order to prevent the further migration of groundwater contamination existing off the Site; (ii) restrictions on the installation and use of new bedrock drinking water wells on properties located in close proximity to the Site which could influence the migration of the existing groundwater contamination off the Site; (iii) deed restrictions; (iv) advisory controls, such as well-use advisories and deed notices; and (v) other mechanisms which may be determined necessary to reduce the potential for exposures by humans to the contaminants on the Site (both in the soils and groundwater) during and until the entire remediation effort is completed.

Installation of Groundwater Extraction and Monitoring Wells

This management of migration alternative will require the installation of several, strategically located and carefully constructed vacuum-enhanced extraction and monitoring wells on the Site. The extraction wells will be designed and

located in a manner which will maximize: (i) the extraction of the contaminated groundwater on the Site that exceeds the groundwater cleanup levels specified in this ROD, with the exception of the contaminated groundwater currently known to exist at the deep bedrock well designated as ODW; and (ii) the removal of those soil contaminants (which are not undergoing excavation as described in SC-5 above) that exceed the soil cleanup levels. These extraction wells will be located on-site within both the till and weathered bedrock during the initial phases of the remedial action. If groundwater contamination is still found to be exceeding the groundwater cleanup levels specified in this ROD within the deeper bedrock aquifer (including within the on-site well ODW) during the remedial action monitoring program, then additional extraction wells may be required in the bedrock aquifer. The exact number, depth, size, and location of these extraction wells (and additional monitoring wells) will be defined during the remedial design phase of the overall remedial action and refined, as necessary, during the course of the remedial action. Such refinement may include modifications to the groundwater extraction rate, alternating pumping at individual or multiple extraction wells to eliminate stagnation points, pulse pumping to allow aquifer equilibration and to allow adsorbed contaminants to further partition from the soil, and/or the construction of new extraction wells to facilitate or accelerate cleanup of the contaminant plume(s).

Prior to full-scale implementation of this groundwater remedial alternative, one or more pilot-scale treatability studies will be conducted on the Site. These studies will, at a minimum, be used to provide additional site-specific data to design a groundwater pretreatment system for suspended solids and/or metals (if pretreatment is necessary), to establish the optimum wavelength and exposure period for the UV light groundwater treatment system, to select the oxidant(s) and their optimum dosage to assure treatment system performance in achieving the groundwater cleanup levels and discharge standards, and to verify that the vacuum-enhanced extraction system can achieve the soil cleanup levels in the areas of the Site between the interceptor trench and Quiggle Brook where limited soil contamination exists above the soil cleanup levels specified herein. In order to conduct such a pilot-study at the Site, an additional aquifer test(s) will also be conducted on the

Site to extract the contaminated groundwater for the treatability study(ies), and provide additional sampling and analysis data in order to determine the numbers, depths, and locations of the vacuum-enhanced extraction wells on the Site. Furthermore, it will also be necessary to apply a fate and transport numerical model to simulate the effects of pumping the aquifer to select the optimal locations of the extraction wells, and to facilitate predictions of system performance and aquifer cleanup response.

On-Site Groundwater Treatment System/Discharge System Installation

The extracted groundwater will be placed in holding tanks located on the Site prior to being treated using the process called ultraviolet (UV) light/oxidation or an equivalent destruction technology. In this process, the extracted groundwater will be put in contact with an oxidant (such as ozone and/or hydrogen peroxide) and UV light. This treatment method will destroy the organic contaminants in the groundwater while producing carbon dioxide, residual ozone gases, and treated water. The residual ozone gases generated by this treatment method will subsequently be destroyed on the Site using an appropriate treatment method.

Pre-treatment of the extracted groundwater prior to UV/oxidation treatment may be necessary to remove inorganics (heavy metals) and/or solids. If pretreatment is necessary, the collected solid (sludge-like) material will undergo additional testing to determine whether the material is hazardous or non-hazardous, and whether additional treatment and/or disposal is required on this material either on-site or off-site. Additional post-treatment of the UV-treated groundwater using liquid-phase carbon adsorption, or an equivalent treatment technology, prior to discharge into Quiggle Brook will be required if such further treatment is warranted to meet the site-specific discharge requirements/standards, and to eliminate potential slugs of contamination from passing through the UV/oxidation system. If liquid-phase carbon adsorption is used for such post-treatment, the carbon will be either regenerated or incinerated off-site at a permitted facility.

The vacuum-extracted, contaminated soil gases will also be treated on the Site using a vapor-phase carbon adsorption process or an equivalent treatment technology prior to

discharge into the atmosphere. These soil gases will be monitored accordingly to ensure compliance with Federal and State air quality standards and to protect public health, welfare and the environment of the surrounding community.

The groundwater treatment system effluent will be piped to Quiggle Brook for discharge. The piping and discharge point will be located entirely on the Site. The discharge point will be designed so that it will preserve the wetland areas along Quiggle Brook by keeping these areas moist despite the extraction of groundwater from these areas. This discharge will, however, not further impact the area(s) where the treated water is actually discharged into the brook.

Groundwater Treatment System Monitoring, and Operation and Maintenance

The treated groundwater will be sampled periodically prior to being directly discharged into Quiggle Brook. Periodic sampling will also occur, at a minimum, in the brook, in existing and new monitoring wells, residential wells, and throughout the treatment system. The frequency of sampling will be determined during the remedial design. Samples collected during these monitoring periods will, at a minimum, utilize those analytical methods established under either or both the SDWA (500 series methods) and RCRA (8000 series/SW-846 methods) to provide the best precision and accuracy analytically achievable at the time these samples are obtained. In addition, periodic sampling will include the collection and analysis of groundwater samples in on-site monitoring and residential wells for the compound, N,N-dimethylformamide - DMF, using the best analytical methods available which are approved by EPA; while further, limited monitoring for arsenic and lead will also occur on the Site.

The objective of these sampling efforts will be to ensure that the treated water achieves the discharge criteria and that ambient water quality criteria or other standards within Quiggle Brook are not exceeded by the discharge to Quiggle Brook, and that the groundwater cleanup levels established for this Site are being achieved throughout all the aquifers underlying the Site, and that surrounding residential wells are not being impacted by the contamination and/or extraction of groundwater on the Site.

F-4: Facilities Decontamination and Demolition

Facilities Alternative F-4 has been selected to facilitate the cleanup of the contaminated soil and to address the existing contamination of and within all the facilities that currently remain at the UCC Site. These facilities include, at a minimum: the still building and associated production facilities, the welding shop, the incinerator complex, all concrete pads, and the church.

Decontamination (and Treatment, as appropriate)

This component of the overall remedial action will involve the decontamination of all on-site facilities (including, at a minimum, any and all equipment, tanks, pipes, and drums contained within these facilities or buried on-site) using high-pressure steam cleaning or another effective decontamination technique, to the maximum extent practicable. Whether high-pressure steam cleaning or another decontamination technique is utilized, every effort will be made to minimize and/or mitigate the release of airborne volatile and particulate emissions (and excessive noise) into the surrounding environment during all phases of such decontamination work. These efforts will include the use of one or more of the following techniques in order to minimize and/or mitigate a release of such emissions: controlled steam cleaning techniques, dust suppressants (e.g. water or foaming agents), partial or full enclosures on each or all of the on-site work areas, and/or air pollution control devices to treat air emissions collected by an enclosure. Additionally, all water resulting from these decontamination operations will be collected and analyzed to determine the eventual disposition of this material. If further treatment of this water is required, this treatment will occur on-site using the UV/oxidation groundwater treatment system as described above in MM-4, if technically practicable, or another equally effective water treatment technique.

Prior to facilities decontamination, any contaminated water currently remaining within the sumps on the Site will be drained, collected, and analyzed prior to eventual treatment on or off the Site. If treatment on-site is warranted, such treatment will occur using the UV light/oxidation system being employed for groundwater treatment, if technically practicable, or an equally

effective treatment technique.

All of the concrete on the Site from the warehouse pad, structures, floors and sumps will undergo low-temperature thermal aeration treatment or an equivalent thermal desorption technique (as described in the selected source control alternative, SC-5) following crushing of this material to enable such treatment. This crushing operation will be carefully controlled, as discussed above under SC-5, to prevent and/or eliminate any potential releases of volatile or particulate emissions and excessive noise into the surrounding environment. The treated concrete will then be used as backfill on-site, if it meets the RCRA LDR standards determined as ARARs for the UCC Site, or disposed of off-site at a permitted, RCRA hazardous waste facility.

The asbestos contained within the still building will be appropriately containerized in accordance with federal and state requirements, and subsequently removed from the Site for off-site disposal.

Any and all other RCRA hazardous waste (including, at a minimum, liquids, sludges, and ash) found within the incinerator equipment, sumps, and/or other on-site equipment will be treated by best available and appropriate techniques prior to off-site disposal. Based on existing sampling results, such treatment will likely include, at a minimum, solidification/stabilization techniques due to the characteristics of these hazardous wastes. The dioxin/lead-contaminated secondary scrubber ash found within the incinerator equipment components will also be solidified/stabilized to meet the RCRA LDR treatment standards for F001-F005 spent solvents, and the RCRA characteristic of toxicity requirements (through TCLP testing) prior to off-site disposal at a permitted RCRA facility. These requirements are based upon an assessment that these incinerator residues are classified as F001-F005 wastes pursuant to EPA's "derived-from" rule at 40 CFR 261.3 (c)(2).

Demolition

Following these activities, the welding shop, still building and associated production facilities, the former church, and the entire incinerator complex will be demolished. These demolished facilities (debris) will then undergo extensive,

representative sampling and analysis to determine whether this debris is hazardous or non-hazardous.

Off-Site Disposal

Finally, demolition debris (and any other material discussed above) which is determined to be non-hazardous will be taken off-site for disposal at a permitted, demolition landfill without prior treatment. Demolition debris, and all other material described above, that is determined to be a hazardous waste will also be taken off-site (following additional treatment, if required) and disposed of at a permitted, RCRA hazardous waste facility.

OS-2: Limited Action

A Limited Action remedial alternative has been selected to address the remedial response objectives stated previously for the off-site soils surrounding the UCC Site. Additionally, this remedial alternative has been selected to further define whether or not off-site soil contamination is present as a result of past UCC operations and, if so, whether this contamination warrants further remedial action.

Data Collection and Analysis

Under this remedial alternative, continuous, site-specific meteorological data (i.e., wind speed, wind direction, temperature, and barometric pressure) will be collected for a minimum period of five years. Following the acquisition of one full-year of meteorological data from the Site, additional air modeling simulations (similar to those performed during the RI) will be performed to determine the potential locations where airborne materials from the incinerator and/or the on-site boilers may have been deposited off the Site. Based upon the results obtained from this re-modeling effort (or sooner, if required), in comparison to the results obtained during the RI using Augusta, Maine meteorological data and other factors to be considered, additional off-site soil samples will be collected. These samples will be analyzed, at a minimum, for dioxins and furans, heavy metals and semi-volatile organic compounds.

Following the initial, minimum, five-years of site-specific meteorological data collection (as stated above), the

incinerator and/or on-site boiler stack(s) will be modelled again to determine where potential, additional off-site locations will require additional sampling to be performed. If additional sampling is warranted in new, off-site locations based upon this and previous modeling efforts and any other factors that must be considered, these samples will be analyzed, at a minimum, for the same organic and inorganic compounds mentioned above.

Throughout all phases of this data collection and analysis effort, EPA will determine if additional remedial actions are required for these off-site soils. This determination will be made following an opportunity for both State and public involvement.

To the extent required by law, EPA will review the Site at least once every five years after the initiation of remedial action at the UCC Site if any hazardous substances, pollutants or contaminants remain at the Site to assure that the remedial action continues to protect human health and the environment. EPA will also evaluate risk posed by the Site at the completion of the remedial action (i.e., before the Site is proposed for deletion from the NPL).

XI. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the UCC Site is consistent with CERCLA and the NCP. The selected remedy is protective of human health and the environment, attains ARARs and is cost effective. The selected remedy also satisfies the statutory preference for treatment which permanently and significantly reduces the mobility, toxicity or volume of hazardous substances as a principal element. Additionally, the selected remedy utilizes alternate treatment technologies or resource recovery technologies to the maximum extent practicable.

A. The Selected Remedy is Protective of Human Health and the Environment

The remedy at this Site will permanently reduce the risks presently posed to human health and the environment by eliminating, reducing or controlling exposures to human and environmental receptors through treatment, engineering controls, and institutional controls. Specifically:

- The combination of the source control component (SC-5) and the management of migration component (MM-4) will reduce the most significant risks (principal threats) identified in the Baseline Risk Assessment: the present and future risks posed by ingestion of contaminated groundwater. The selected remedy will attain federal MCLs and non-zero MCLGs, which are generally protective of human health and suitable for public drinking water supplies. Where no MCL or MCLG exists, other standards were considered in setting cleanup levels which provide protection against risks associated with ingestion of (or inhalation of or dermal contact with) contaminated groundwater. Use of a vacuum-enhanced groundwater extraction system increases the certainty that groundwater cleanup standards will be attained throughout the Site.

- The selected remedy will eliminate or reduce risks to human and environmental receptors by preventing contaminated on-site groundwater from migrating off-site and into nearby surface waters, particularly Quiggle Brook. Discharge of treated groundwater will not adversely affect Quiggle Brook, since groundwater will be treated to water quality standards.

- The facilities (F-4) component of the remedy will permanently eliminate or reduce exposures to hazardous substances present in the facilities. OS-2, sampling of off-site soils to assess further the impacts of past operations of the UCC incinerator, is necessary to ensure that the remedy is protective and effective in the long-term and short-term. Because dioxins and furans were found in the secondary scrubber on the UCC Site, it is possible that these toxic compounds were released through the incinerator stack and deposited off-site. Given the technical difficulties of reconstructing the direction of the plume from the stack and the fact that one off-site sample showed inconclusive results, further off-site sampling is needed to protect human health and the environment.

- Use of temporary institutional controls limiting the use of existing and new drinking water wells during the remedial action is necessary to ensure that pumping does not draw groundwater contamination further off-site.

In addition, the selected remedy will result in human exposure levels that are within the 10^{-4} to 10^{-6} incremental cancer risk range and that are less than the hazard index of one (1) for non-carcinogens. More specifically, the source control and management of migration components will attain the groundwater cleanup standards set at MCLs, which are generally within the range for protection of human health. Once all the groundwater cleanup standards specified above are attained, the residual risk will be re-calculated. If at that point the cumulative risk posed by remaining contaminants falls outside the 10^{-4} to 10^{-6} incremental cancer risk range, then further remedial action will be taken to bring the cumulative risk within the acceptable range.

Finally, implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts. As described above, measures will be taken to reduce to acceptable levels any short-term risks associated with excavation and treatment of contaminated soils, and the vacuum extraction and groundwater treatment system.

B. The Selected Remedy Attains ARARs

This remedy will attain all the substantive, non-procedural portions of applicable or relevant and appropriate federal and state requirements that apply to the UCC Site. The key environmental laws from which ARARs for the selected remedial action are derived, and the specific ARARs, include:

Chemical-Specific

Safe Drinking Water Act (SDWA) - Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs)
Clean Water Act (CWA) - Federal Ambient Water Quality Criteria (AWQC)
Clean Air Act (CAA) - National Ambient Air Quality Standards (NAAQS) and National Emission Standards for Hazardous Air Pollutants (NESHAPs)
Maine Water Pollution Control Law
Maine Air Pollution Control Law
Maine Ambient Air Quality Standards

Location-Specific

Executive Order 11990, Protection of Wetlands
Executive Order 11988, Floodplain Management
Maine Water Classification Program
Maine Site Location of Development Law
Maine Protection of Natural Resources Law
Maine Water Pollution Control Law
Maine Air Pollution Control Law

Action-Specific

Resource Conservation and Recovery Act (RCRA) - Land Disposal Restrictions (LDRs)
Clean Air Act (CAA) - NESHAP Regulations
DOT Rules for Transportation of Hazardous Materials
OSHA Health and Safety Standards
OSHA Record Keeping, Reporting and Related Regulations
Maine Hazardous Waste Management Rules
Maine Protection of Natural Resources Law
Maine Water Pollution Control Law
Maine DEP Asbestos Abatement Regulations
Maine Air Pollution Control Law

The following policies, criteria, and guidances will also be considered (TBCs) during the implementation of the remedial action:

To-be-Considered

Proposed MCLs and proposed MCLGs greater than zero
OSWER Directive 9355.0-28, Control of Air Emissions from Superfund Air Strippers at Superfund Groundwater Sites
Reference Concentrations (RfCs)
Maine Department of Human Services Rule 10-144A, CMR c. 231 -- Maximum Exposure Guidelines (MEGs)
Maine Department of Human Services Policy, "Derivation of Interim Exposure Guidelines for the Hazardous Air Pollutant Program"

A table briefly summarizing the ARARs for the selected remedy at the Union Chemical Site is attached as Table 13 to this ROD. A more complete narrative summary of significant ARARs and TBCs is provided below.

Federal and State Drinking Water ARARs and TBCs

The groundwater in the aquifer underlying the Site is classified by the State as GW-A, a drinking water source. EPA has determined that Maximum Contaminant Levels (MCLs) promulgated under the Safe Drinking Water Act (SDWA) are relevant and appropriate. MCLs are enforceable standards under the SDWA which represent the maximum level of contaminants that is acceptable for users of public drinking water supplies. MCLs are relevant and appropriate because the groundwater immediately off-site is currently used as a drinking water source, and because the groundwater underlying the Site may be used as a drinking water source in the future.

MCLs were used in establishing cleanup levels for the Site,[6] except that for those contaminants for which no MCLs were

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[6] As stated in the preamble to the NCP, 55 Fed. Reg. 8751, MCLGs (Maximum Contaminant Level Goals established under SDWA) which are set at levels above zero, may be relevant and appropriate based on site-specific factors. MCLGs are non-enforceable goals set at levels at which no adverse health effects may arise, with a margin of safety. In this case, where non-zero MCLGs existed for the contaminants of concern at the Union Chemical Site, they were equivalent to the MCLs used.

available, other standards and guidelines were considered in establishing cleanup levels. The guidelines considered were: proposed MCLs and proposed MCLGs, and the Maximum Exposure Guidelines (MEGs) established by the State of Maine. Because these standards do not meet the criteria for an ARAR, as established by Section 121(d) of CERCLA and the NCP, EPA is not required to meet these standards. They are, however, to be considered (TBCs) for the following reasons:

1. Consideration of proposed MCLs and proposed non-zero MCLGs is appropriate in setting cleanup levels because these proposed standards have been developed in accordance with EPA policy in establishing final MCLs and MCLGs.

2. For 1,1-dichloroethane and methyl ethyl ketone, it is appropriate to consider MEGs in the development of cleanup levels, since no MCL or other ARAR exists. Use of these MEGs will reduce risks to levels which are within EPA's acceptable range of 10^{-4} to 10^{-6} for carcinogenic compounds, and which are also below a Hazard Index of one (1) for non-carcinogenic compounds for the relevant toxicity endpoints. These MEGs are developed by the Maine Department Human Services based on federal standards, health advisories and environmental toxicology methods.

EPA believes that the ARARs and TBCs established as cleanup levels will be attained by extracting and treating the groundwater to attain these levels throughout the aquifers on the Site. EPA anticipates that these cleanup levels will be attained first in the overburden (till) and weathered bedrock located on the Site and, thereafter, in the deeper bedrock, if required. Cleanup levels in the overburden/weathered bedrock must be attained before attempting to extract and treat groundwater from the deep bedrock. This will ensure that the principal source areas of groundwater contamination on the Site (those areas near the existing on-site facilities) will not be drawdown into the deeper bedrock by the operation of a deep bedrock extraction well system. This is critical since the source of residential well water in the area of the Site is primarily from the deeper bedrock aquifer system throughout the Site area.

Federal and State Surface Water ARARs and TBCs

The effluent standards of the Maine Water Classification Program, 38 MRSA Ch. 3, Art. 4-A, § 464 *et seq.* are applicable to the selected remedy since the remedial action will involve direct

discharge of treated groundwater to Quiggle Brook.

Quiggle Brook is classified as a tributary to a Class GPA water (Crawford Pond).[7] Class GPA waters are suitable for use as drinking water after disinfection, recreation, fishing and habitat for fish and other aquatic life. Any discharge into a tributary of a Class GPA water which, by itself or in combination with other activities, causes water quality degradation or impairs the characteristics and designated uses of downstream waters is prohibited.

Maine's regulations relating to Water Quality Criteria for Toxic Pollutants provide that: (i) levels of toxic pollutants shall not exceed Federal Ambient Water Quality Criteria; and (ii) where federal criteria do not exist, the Board of Environmental Protection may adopt site-specific numerical criteria for toxic pollutants. In this case, because drinking water is also a designated use of Class GPA waters, MCLs are relevant and appropriate standards that must be met in the effluent. In addition, AWQCs for protection of human health are relevant and appropriate where no MCL for a particular contaminant exists. Federal AWQCs for protection of aquatic life are also applicable to the Site, since the designated use of the stream requires protection of aquatic life.

The selected remedy will attain these ARARs because prior to its discharge to Quiggle Brook, contaminated groundwater will be treated to AWQCs. Discharge of treated groundwater to Quiggle Brook will not cause water quality degradation or impair the uses or characteristics of Quiggle Brook or Crawford Pond.

Federal and State Air Pollution ARARs and TBCs

The regulations established pursuant to the Air Pollution and Protection Act, 38 MRSA § 581, have been approved by EPA under Section 110 of the Clean Air Act (CAA), and are thus enforceable as federal requirements.

The State of Maine has established requirements for sources

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[7] Quiggle Brook is also a Class B water. Class B waters are acceptable for fishing, recreation, habitat for fish and other aquatic life, and after treatment, use as a drinking water supply. Discharges to Class B waters cannot degrade the water below this classification.

emitting air contaminants in Chapter 115, promulgated pursuant to 38 MRSA § 590. General process sources with emissions of less than 100 pounds per day or 10 pounds per hour of any regulated pollutant are not covered by the licensing requirements of this Act. Because it is expected that remedial activities at the UCC site will not exceed these amounts, these regulations are not applicable, but are relevant and appropriate.

Chapter 115 also includes requirements for new sources, providing that: Best Available Control Technology (BACT) must be used; the emissions will not violate emission standards established by DEP; the emissions either alone or in conjunction with other emissions will not violate AAQSes[8]; and that limits on impairment of visibility must be attained. In non-attainment areas, the technology used must be the Lowest Achievable Emissions Rate (LAER). Since the UCC site is in an area designated as a non-attainment area for ozone, LAER would be required for ozone emissions.

The proposed remedy will meet the technology standards of the Maine regulations. The low temperature thermal treatment system will satisfy BACT, and an ozone destruction unit will be used to limit ozone emissions from the UV/oxidation unit, satisfying the LAER standard for ozone emissions. The vapor phase activated carbon treatment is BACT for treatment of organic vapor streams captured by the vacuum extraction system. In addition, ambient air quality standards will be achieved by monitoring and controlling emissions throughout the performance of the remedial action. Primary and secondary Maine AAQS for particulate matter, photochemical oxidants, and hydrocarbons will be attained during remedial action through the use of controls described in Section X.

Another relevant and appropriate requirement is the portion of the federal National Emission Standard for Hazardous Air Pollutants (NESHAP) for vinyl chloride which sets emission levels for air strippers. The vapor phase carbon component of the

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[8] In Chapter 110, Maine has established Maine Ambient Air Quality Standards for particulate matter, photochemical oxidants, and hydrocarbons. These are relevant and appropriate requirements during soil excavation and low temperature soil aeration treatment, vacuum extraction of contaminants from soils, groundwater treatment, demolition of facilities, and decontamination of facilities.

groundwater extraction system is sufficiently similar to air stripping that the vinyl chloride emission standard in the NESHAP is relevant and appropriate. The selected remedy will attain the federal NESHAP standard for releases of vinyl chloride at the emission point from vapor phase carbon component of the groundwater extraction system, or additional controls must be included on the exit stream from the carbon component.

In addition, the NESHAP standard for asbestos is applicable to this Site, since the selected remedy calls for demolition of facilities containing asbestos. NESHAP standards for asbestos will be attained during remedial action by vacuuming asbestos from the facilities before demolition, wetting the asbestos, placing it into leakproof bags, and proper labelling and disposal. Removal and disposal of asbestos will also apply with applicable Maine Department of Environmental Protection Asbestos Abatement Regulations.

The Resource Conservation and Recovery Act (RCRA) and Maine Hazardous Waste Management Rules

The State of Maine has been authorized by EPA to administer and enforce the RCRA program in lieu of federal authority. The authorized state hazardous waste regulations incorporate by reference the federal RCRA standards for hazardous waste facilities,[9] and also impose additional requirements which are more stringent than the federal RCRA requirements.

Compliance with RCRA depends on whether the wastes are RCRA hazardous wastes as defined under Maine's RCRA program. Contamination at the Site is the result of spills or leaks from the operations of the Union Chemical Company. Manifests and other documentation indicate that the substances received by the Union Chemical Company were listed hazardous wastes (largely solvent wastes, defined as F001 through F005 waste in 40 CFR 261.31), or otherwise fall within Maine's definition of hazardous wastes. Accordingly, the Maine Hazardous Waste Management Rules are applicable to the Site.

The remedial action will be undertaken in accordance with these applicable RCRA regulations, including general facility standards, preparedness and contingency requirements, manifesting

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[9] Accordingly, citations to basic RCRA requirements in this ROD will be to 40 CFR Part 264.

and record keeping requirements, groundwater monitoring requirements, closure and post closure requirements, and use and management of containers. In addition, the remedy will comply with additional requirements, including the facility location requirements and the additional standards applicable to hazardous waste storage facilities, contained in the Maine Hazardous Waste Management Rules, Chapter 854 of the Maine Department of Environmental Protection Rules.

Spent carbon generated during the vapor phase carbon treatment will be regenerated or incinerated offsite in a RCRA facility in accordance with federal and state requirements.

Hazardous and Solid Waste Amendments to the Resource Conservation and Recovery Act

Land Disposal Restrictions (LDRs) promulgated under the Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act are applicable to some components of the selected remedy. Because contaminated soil found at the Site contains certain restricted wastes (notably F001-F005 wastes), LDRs are ARARs for disposal of this soil. Such wastes are prohibited from land disposal unless a waste analysis using the Toxicity Characteristic Leaching Procedure (TCLP) indicates that the concentrations are less than the levels specified in 40 CFR 268.41. The NCP provides that, generally, a variance from the LDR standards will be sought for CERCLA soils and debris. However, in this case, based on the analysis performed in preparation of the Final Draft FS, the soil treatment method included in the selected remedy (low temperature soil aeration treatment) is expected to attain levels lower than the requirements of 40 CFR 268.41, and the treated soils may be backfilled into excavation areas at the Site.[10]

Residuals from the facilities, including residuals from the sumps, tanks, and floors, will be treated, if necessary, to attain levels specified in 40 CFR 268.41 and will be disposed of off the Site.

The selected remedy also calls for solidification of ash from the UCC secondary scrubber, which contains high levels of lead and

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[10] If after pilot studies or implementation of the soil treatment component of the remedy, it appears that LDR levels cannot be attained, a treatability variance will be sought.

low levels of dioxins and furans, and disposal in a permitted offsite RCRA landfill. This action is expected to attain LDR requirements.[11]

Floodplains and Wetlands ARARs

EPA regulations at 40 CFR Part 6, Appendix A, require EPA to implement Executive Order 11988 (Floodplain Management) and Executive Order 11990 (Protection of Wetlands). To comply with Executive Order 11988, a remedial action must reduce the risk of flood loss, and restore and preserve the natural and beneficial values served by floodplains. Executive Order 11990 requires EPA to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the beneficial values of wetlands. In addition, new construction in wetlands is to be avoided unless there is no practicable alternative, and steps must be taken to minimize harm to wetlands.

As part of the RI/FS, a wetlands/floodplains assessment was performed. The selected remedy will result in minimal impacts to the wetlands and floodplain on the Site. Extraction wells and piping must be located within the 100-year floodplain in order to extract contaminated groundwater. Pumping at these wells will result in some dewatering of the wetland area adjacent to Quiggle Brook; however, it is expected that a portion of the treated groundwater will be discharged to Quiggle Brook and the nearby wetlands area, thus resaturating the wetland. After the groundwater wells are shut off, the groundwater will again discharge to the wetlands area, resulting in resaturation.

Chapter 854 of the Maine Hazardous Waste Management Rules, prohibiting the location of a hazardous waste facility on wetlands or within the 100-year floodplain, is an ARAR and will be attained by the selected remedy.

Other ARARs

Portions of the Maine Site Location of Development Law, 38 MRSA §

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[11] As stated on page 238-39 of the FS, this ash is not an F020-F023 waste or an F026-F028 waste. Rather, the ash is a byproduct of the incineration of F001-F005 wastes, and may be land disposed if a TCLP test on an extract of the ash shows that the levels specified for F001-F005 wastes in 40 CFR 268.41 have been attained. These levels are expected to be attained by the selected remedy.

481, and the regulations thereunder are relevant and appropriate to this Site. The statute provides that a new development which is a hazardous activity cannot have an adverse effect on the natural environment or pose an unreasonable risk of discharge to a significant groundwater aquifer. Portions of Chapter 375 which set out the no adverse environmental effects standards for air quality, natural drainage ways, runoff, erosion and sedimentation control, groundwater quality, and buffer strips, are relevant and appropriate and will be attained by the selected remedy. In addition, soil excavation and facilities demolition activities will be monitored to attain the noise abatement standards set out in Chapter 375.

The Maine Natural Resources Protection Act provides that removal of soils or alteration of structures adjacent to streams must not cause unreasonable soil erosion, cause unreasonable harm to significant wildlife habitats, unreasonably interfere with natural water flow, lower water quality, or unreasonably cause or increase flooding. Chapter 305 of the MDEP regulations provides further standards for erosion control and soil excavation. These portions of the statute and regulations will be attained by the selected remedy. Chapter 310, the Wetland Protection Rules, defines wetlands to exclude the types found at the UCC Site, but contain relevant and appropriate standards which: (i) prohibit activities that would cause a loss in the wetland area if there is a less damaging practicable alternative, and (ii) requires that alteration of wetlands be kept to a minimum. Relevant and appropriate portions of Chapter 310 will be attained.

C. The Selected Remedial Action is Cost-Effective

In the Agency's judgment, the selected remedy is cost effective, i.e., the remedy affords overall effectiveness proportional to its costs. In selecting this remedy, after identifying alternatives that are protective of human health and the environment and that attain ARARs, EPA evaluated the overall effectiveness of each alternative by assessing in combination the relevant three criteria -- long term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness.

The overall effectiveness of the selected remedial alternative was determined to be proportional to its costs. The estimated total present worth cost of this remedial alternative is approximately $9,724,000 to $10,654,000, (the amount in the Proposed Plan, as modified to reflect the selection of Case B for the quantity of soil to be treated).

The components of this present worth cost are:

- $3,553,000 for SC-5, Case B (the soil component of the remedy). All of this cost is allocated to capital costs.

- $5,108,000 to $6,037,000 for MM-4 (the groundwater component of the remedy). $1,280,000 represents capital costs, and $3,828,000 to $4,757,000 is allocated to operation and maintenance.

- $778,000 for F-4 (facilities decontamination and demolition). All of this cost represents capital costs.

- $282,000 for OS-2 (off-site sampling for five years)

The cost of the selected remedy is proportional to the overall effectiveness of the remedy. This cost is higher than other alternatives, such as capping (SC-3), pump and treat technologies for groundwater which do not incorporate vacuum extraction (MM-3 and MM-5), and facilities decontamination (F-2). However, the less expensive technologies do not provide the same degree of effectiveness or permanence, and are more likely to require longer time frames to achieve the site-specific cleanup levels.

In particular, using vacuum-enhanced groundwater extraction will

increase the certainty of attaining the groundwater cleanup levels than would conventional pump and treat technologies, and will more likely reduce the time for attaining these levels. Additionally, although placing a cap over contaminated soils would eliminate infiltration of surface water through the soil, SC-5 is more effective than a cap because the toxicity, mobility and volume of soil contaminants will be reduced through treatment, thus shortening the time for cleanup of the groundwater contaminated by leachate from contaminated soils. Third, demolition of the facilities (in addition to decontamination) is necessary to implement SC-5. While the cost of in-situ soil treatment (SC-6) is only slightly higher than the cost of SC-5, and in-situ treatment would not require the demolition of the facilities or the excavation of contaminated soils, SC-6 has not been shown to be as effective as SC-5 in reaching cleanup levels in the low part-per-million range. It is anticipated that the time to attain soil cleanup levels would be much longer using in-situ treatment than if low temperature soil aeration treatment is used. Finally, the costs of off-site sampling are proportional to the level of protection afforded. Such sampling is easily implementable and is not estimated to represent a significant cost item.

SC-5 and MM-4 are less expensive than on-site incineration (SC-7) and remedies involving reinjection of treated groundwater (MM-5 and MM-6), but attain similar levels of long-term effectiveness, permanence, and reductions in toxicity, mobility and volume of contaminants through treatment.

Tables D-6, D-12, D-17 and D-19, which are contained within Appendix D of the Final Draft FS, present itemized cost breakdowns for each of the components of the remedy, stating the major assumptions, activities and estimated unit costs. While these costs are in the +50% to -30% accuracy required for Feasibility Study estimates, some changes may be made as a result of the remedial design and construction processes involved after the ROD is signed. It is expected that these changes, in general, will reflect modifications resulting from the engineering design process.

D. The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

Once EPA identified the alternatives that attain ARARs and are protective of human health and the environment, EPA identified which alternative utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of trade-offs among alternatives in terms of: (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility or volume through treatment; (3) short-term effectiveness; (4) implementability; and (5) cost. The balancing test emphasized long term effectiveness and permanence and the reduction of toxicity, mobility and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance.

Overall, the selected remedy provided the best balance of trade-offs among all the alternatives evaluated in the Final Draft FS.

Specifically, the management of migration component of the selected alternative is expected to provide a long-term, effective and permanent remedy for addressing the groundwater contamination present at the Site. Because vacuum extraction will remove impacted air from contaminated soils which have been dewatered by groundwater pumping, it will provide more effectiveness in reducing concentrations of contaminants in previously saturated soils, thereby increasing the certainty of attaining groundwater cleanup levels and permanence of the remedy. The air extracted from the soil will be treated, at a minimum, by a vapor phase carbon system; potential short-term risks to the community and workers posed by the collection of this contaminated air will be minimized by proper design of the vapor phase treatment system, attainment of state and federal emission standards, and by careful monitoring. The UV/oxidation system will permanently reduce the toxicity and volume of contaminants, will be effective in treating groundwater to federal and state water quality standards, can be implemented relatively easily, and is not excessively expensive.

The excavation and treatment of soils through low temperature soil aeration treatment is a permanent and reliable method, will reduce the toxicity, mobility and volume of contaminants in soils

through treatment, and will increase the certainty of attaining groundwater cleanup levels. Case B (i.e. excavation and treatment of approximately 10,500 cubic yards, in-place volume estimate, of saturated and unsaturated soils) provides extra effectiveness by reducing leaching of soil contaminants from the saturated zone near the interceptor trench, which will likely result in decreased costs for the management of migration component.

The facilities component of the remedy will permanently and reliably reduce the risks associated with the facilities, and is necessary for implementation of the source control component (SC-5). The short-term risks will be minimized through careful management of decontamination and demolition techniques, and, when so minimized, are outweighed by the long-term benefits.

E. The Selected Remedy Satisfies the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility or Volume of the Hazardous Substances as a Principal Element

The principal elements of the selected remedy combine a groundwater treatment system together with a method for treating the contaminated soils which are the source of the groundwater contamination. These elements, in turn, address the principal threat at the Site, contamination of the groundwater. The selected remedy satisfies the statutory preference for treatment as a principal element by utilizing UV/oxidation to treat VOCs in the groundwater, low temperature soil aeration treatment to destroy VOCs in the soil, and vapor phase carbon to collect VOCs in air extracted from the soils for eventual treatment.

XII. DOCUMENTATION OF SIGNIFICANT CHANGES

EPA presented a proposed plan (referred to as a preferred alternative) for remediation of the UCC Site on July 12, 1990 at a public informational meeting in Hope, Maine. The source control portion of the preferred alternative included soil excavation and on-site low-temperature soil aeration treatment, the management of migration portion of the preferred alternative included vacuum-enhanced groundwater extraction, on-site groundwater treatment and on-site discharge of treated groundwater into Quiggle Brook, the facilities management portion of the preferred alternative included facilities decontamination, demolition and off-site disposal of debris, and the off-site soils portion of the preferred alternative included limited action.

Four significant changes to the proposed plan were made. First, the soil excavation and treatment option has been changed to Case B; thereby increasing the amount of soil to be excavated and treated. Case B was discussed in the Proposed Plan. Case B was chosen because the additional (roughly) 2,000 cubic yards of in-place soil represented a significant amount of contamination. Without excavation of this source area, the success and the time required for groundwater cleanup could be significantly affected. Furthermore, since the additional contaminated soils included in Case B are immediately adjacent to those included in Case A.1, and since these contaminated soils (though saturated) are shallow, further technical implementability problems are not expected. Finally, comments received from the State of Maine and the public supported excavation of this larger volume of contaminated soils.

Second, groundwater cleanup levels were changed for ten contaminants. Groundwater cleanup levels were eliminated for five contaminants -- chromium, copper, cyanide, nickel, and 1,3-dichlorobenzene -- because they were not identified in the Baseline Risk Assessment as contaminants of concern which may pose a risk at the Site, and because their maximum observed concentrations did not exceed their federal MCLs or proposed MCLs at any time during the Remedial Investigation. The cleanup levels for two contaminants -- bis(2-ethylhexyl)phthalate and methylene chloride -- were lowered, because new proposed MCLs (PMCLs) were published on July 25, 1990 (after issuance of the Proposed Plan), which indicated that these lower levels are necessary to protect the human health. Groundwater cleanup levels for three contaminants -- tetrachloroethene, 1,2-dichloroethene-trans, and xylene were increased from the State of Maine MEGs to their proposed MCL/MCLG levels. The cleanup levels for these contaminants were increased because EPA believes that the scientific evidence supporting

the use of proposed MCLs and proposed MCLGs is stronger than the evidence on which the MEGs were based. EPA has placed in the Administrative Record a memorandum which provides further support for the selection of the proposed MCLs and proposed MCLGs for these contaminants.

Third, because EPA determined that the groundwater cleanup level for xylene should be set at the proposed MCL/proposed MCLG rather than the MEG, EPA adjusted the soil percolation model results (as referred to in Section X.A.2 herein), and resulting soil cleanup level for xylene, to reflect this change. Thus, the soil cleanup level for xylene is now set at 100 ppm rather than 10 ppm. However, because the xylene contamination in soils on the Site is co-located with the three other contaminants for which soil cleanup levels have also been set, the impact of this change on the volume of soils to be excavated and treated has been determined by EPA to be minimal.

Finally, the selected remedy includes the sampling for N,N-dimethylformamide (DMF). This change was made in response to comments by the public and the State of Maine which pointed out that, while DMF may pose a risk at the Site and was a component of the patented furniture stripping compounds generated at the Site, it was not specifically sampled for during the Remedial Investigation.

XIII. STATE ROLE

The State of Maine, Department of Environmental Protection (MDEP) has reviewed the various remedial alternatives evaluated for the UCC Site and has indicated that they agree with the selected remedy contained herein. The State of Maine has also reviewed the Final Draft Remedial Investigation, Baseline Risk Assessment and Final Draft Feasibility Study reports to determine if the selected remedy is in compliance with applicable or relevant and appropriate State Environmental laws and regulations.

The State of Maine concurs with the selected remedy for the Union Chemical Company, Inc. (UCC) Site. A copy of the declaration of concurrence is attached as Appendix B.